भारतीय मानक **IS 1448 (Part 62) : 2023**
Indian Standard

पेट्रोलियम और उसके उत्पाद — परीक्षण पद्धतियाँ

भाग 62 ग्रीस की तापीय स्थिरता

(दूसरा पुनरीक्षण)

Petroleum and its Products — Methods of Test

Part 62 Heat Stability of Greases

(Second Revision)

ICS 75.100

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August 2023 **Price Group 4**

Methods for Sampling and Test for Petroleum and Related Products of Natural or Synthetic Origin (Excluding Bitumen) Sectional Committee, PCD 01

FOREWORD

This Indian Standard (Part 62) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Methods for Sampling and Test for Petroleum and Related Products of Natural or Synthetic Origin (Excluding Bitumen) Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

Lubricants and greases have practical limits on the optimum operating temperature. If these materials are subjected to temperatures beyond the limit, there will be loss in stability. Heat stability of grease helps in determining the higher limit of operating condition.

This standard was first revised in 1974. The second revision has been brought out to keep space with the latest technological developments and international practices. In this revision, no major changes have been made.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’.

Indian Standard

PETROLEUM AND ITS PRODUCTS — METHODS OF TEST

PART 62 HEAT STABILITY OF GREASES

(Second Revision)

1 SCOPE

This standard prescribes two methods of test for determination of heat stability of lime base, soda base and soda-lime mixed base greases. The Method A is applicable for lime base greases and the Method B is applicable for soda base and soda-lime mixed base greases.

2 OUTLINE OF THE METHOD

2.1 In Method A, 10 g of the sample in a watch glass is placed in an oven, maintained at 120 ºC ± 1 ºC or at any other specified temperature for at least one hour. After keeping it for 24 h at room temperature, the sample is examined for signs of breakdown, change in consistency and separation of oil.

In Method B, 30 g of the sample in a dish is placed in an oven maintained at 150 ºC ± 1 ºC for 3h. After keeping for 24 h the dish containing the grease is kept in an inverted position for 24 h. The difference in mass before and after inverting the dish is calculated as the percentage loss in mass of the sample initially taken for the test.

3 METHOD A

3.1 Procedure for Superior Quality Lime Base Greases

3.1.1 Weigh accurately about 10 g of the sample and make it into a disc of approximately 35 mm diameter and 5 mm height in the centre of a watch glass of 90 mm to 100 mm diameter and 7 mm to 10 mm depth at centre.

3.1.2 Place the watch glass on a removable metal shelf in an air oven maintained at 120 °C ± 1 °C. To allow free air circulation, do not cover the metal shelf with asbestos sheet or any other thing.

3.1.3 Maintain the oven at 120 ºC ± 1 ºC for at least half an hour before introducing the sample.

3.1.4 When several tests are being carried out simultaneously, keep the watch glasses in the oven in such a way that they do not cover more than 40 percent of surface area of the removable shelf on which the sample is kept.

3.1.5 Keep them in the oven for one hour from the time the oven temperature automatically rises to 120 ºC after the initial temperature drop during introduction of the watch glasses (normally the time taken for the oven to attain 120 °C temperature is about half an hour).

3.1.6 Remove the watch glasses, allow them to stand for 24 h at room temperature in a draught free place and examine the sample for signs of breakdown, marked change in consistency or separation of the oil by the following procedures:

a) keeping the watch glass in a slanting position (10 ºC to 20 ºC from the vertical) and watching for flow of oil, thinned grease, if any; and
b) cutting the sample with a glass rod.

3.2 Procedure for Lime Base Greases

Proceed as under **3.1** with the modification that the oven shall be maintained at 95 ºC ± 1 ºC for the test.

3.3 Precision

The precision of the method has not been established.

4 METHOD B

4.1 Apparatus

4.1.1 A dish made of metal (nickel or steel), 75 mm in diameter and 19 mm in depth, fitted with a closely fitting lid in which a hole of 70 mm diameter has been cut, and

4.1.2 A perforated zinc sheet of approximately 12 holes to a square centimetre soldered over the cut out portion of the lid.

4.2 Procedure

4.2.1 Place approximately 50 g of the sample in the tared metal dish and weigh with the lid.

4.2.2 Place the dish without the lid in an oven at

150 °C ± 1 °C. After heating for 3 h at this temperature, take out the dish and allow it to stand undisturbed for 24 h at room temperature.

4.2.3 Place the lid on the dish and reweigh (mass *A*). Invert the dish along with lid, on a pad offilter paper and allow it to remain for 24 h.

4.2.4 Wipe out any oil adhering to the exterior of the lid and dish and weigh (mass *B*).

4.3 Calculation

Calculate the difference in mass *A* and mass *B* and express as percentage loss in mass of thematerial initially taken for the test.

4.4 Precision

The precision of the method has not been established.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Methods for Sampling and Test for Petroleum and Related Products of Natural or Synthetic Origin (Excluding Bitumen) Sectional Committee, PCD 01

Organization	*Representative(s)*
Indian Institute of Petroleum, Dehradun	Dr Anjan Ray **(*Chairperson*)**
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